V. Technical Specifications

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Technical Specifications of the Belmont *FMS2000*

DIMENSION	
Size	13.5" x 12" x 7.5" (34.29cm x 30.48cm x 19.05cm)
Weight	26 lbs (11.8 Kg)

PORTABILITY	
Hand Carry	Handle on top of unit for easy transport
I.V Pole Mount	I.V pole mountable or free standing. I.V pole diameter range of pole mount: 1" - 1 1/4"

POWER	
AC Input Voltage	115-120 V~ or 230 V~
Fuse	1.25A, 250V, Fast Acting, 5x20mm
Operating Frequency	50/60 Hz
Maximum Power	1440 VA
Line Isolation	1500 V to ground
Earth Leakage Current	< 300 µA (For Domestic unit) < 500 µA (For 230 V~ unit)
Electrical Compliance	EN 60601-1, UL 2601-1, CSA/C22.2 - No. 601.1-M90
Circuit Breaker	15Amp, 125VAC/250VAC, 50/60 Hz
Power Cord	U.S.: 3 conductors, 14 AWG type SJT Cord with Hospital grade plug
	Outside U.S.: 3 x 1.5 mm^2 International Harmonized Cordage with Hospital grade plug

Battery Type	Rechargeable lead acid
Running Time	> 30 minutes at 50ml/min. without heat
Recharge Time	8 hours

ENVIRONMENTAL	
Operating Temperature	10° C to 32° C (50° F to 90° F)
Storage Temperature	-15° C to 40° C
Relative Humidity	10% to 90%
Pressure	49-103 kPa
Shock and Vibration	Meet MIL STD.810E method 514.4 (Basic Transportation)

OPERATING PARAMETERS	
Flow Rate	10 -750 ml/min in 10 ml/min steps plus 2.5 and 5.0ml/min with fluids of viscosity 1 to 8 centipoise (Water and crystalloid fluids through packed red cells) Tolerance: ± 10% from 20 - 750 ml/min ± 25% for 2.5, 5.0,10 ml/min
Output Temperature	Set to 37.5° C for flow ≥ 60ml/min , to 39° C at 50ml/min or lower. Maximum allowable temperature: 41.9° C Tolerance: 1°C for fluid temperature between 30 °C to 40 °C and 2°C outside this range
Heating Capacity	1300 watts to fluid (35° C temperature rise at 500 ml/min)
Line Pressure	0 - 300 mm Hg, via pressure transducer

Operating Modes	a) Load disposable set b) Prime system c) Prime patient line d) Infuse at operator controlled rate with warming e) Infuse fixed volume bolus with warming f) Stop system

OPERATING PANEL	
Control Panel and Display	Splash proof touch screen display
Display Area	5" X 2.5" (12.7cm X 6.35cm)
Status Display	Flow rate (ml/min) Total volume infused (ml) Line pressure (mm hg) Output infusate temperature (^{o} C) Bolus volume (ml) Alarm messages
Functional Keys	Keys are displayed appropriate to the particular point in operation
Character Display	Graphical Alarm Messages - display where errors have occurred

SAFETY AND MONITORING	
Infusate Temperature	Via infra-red sensors at the input and output to the heat exchanger.
Line Pressure	A pressure transducer monitors the in line pressure. If the pressure reaches the threshold set by the user, the pump will slow down until pressure falls below the threshold. If the in-line pressure rises faster than 40 mm Hg/ml or exceeds 400 mm Hg, an alarm sounds, the "HIGH PRESSURE" message is displayed, the line to the patient is closed and pump comes to an immediate stop.

Air Detection	Two ultrasonic air detectors monitor air in the fluid path. The fluid detector is mounted closest the fluid bag. It sounds an alarm if there is no fluid entering the system. The other air detector checks for air in the fluid line before it enters the patient line. Out of Fluid criterion: Detect 0.8ml air in input line Air detection criterion: Detect 0.1ml air in fluid line
Diversion Valve	Provides flow path to patient, or recirculation fluid path within the system. The recirculation path is used to prime the system and eliminate air after an air detection alarm. The recirculation path is activated at all alarm conditions.

ALARM STATES and CONTROLS	ALARM MESSAGES
Operator Setting, User-correctable	MISSING DISPOSABLE DOOR OPEN FLUID OUT AIR DETECTION HIGH PRESSURE
System Status	LOW BATTERY
System Failures	AIR DETECTOR FAULT PUMP FAULT VALVE FAULT HEATER FAULT LATCH HEAT POWER READ BACK FAULT HEATER OVER POWER FAULT POWER MODULE OVERTEMP HEATING FAULT WATCHDOG OVER TEMP

V. Technical Specifications

Classifications	
Type of Protection Against Electric Shock	Class I, or internally powered
Degree of Protection Against Electric Shock	CF defibrillator-proof
Degree of Protection Against Harmful Ingress of Water	IPX1, Drip proof
Method of Sterilization	Disposable delivered sterile, single use
Degree of Safety in Presence of Flammable Anaesthetics	Not suitable
Mode of Operation	Continuous
Medical Equipment **UL260** **1-1** **49WB**	F M S 2000 has been evaluated with respect to electric shock, fire and mechanical hazards only in accordance with UL2601-1, CAN/CSA C22.2 No. 601.1- M90, and EN 60601-1: 1990 + A1: 1993 + A11: 1993 + A12: 1993 + A2: 1995 + A13: 1996

Symbols and Definitions	
Symbol	**Description**
CE 0123	Compliance to Medical Device Directive 93/42/EEC
	Alternating current
	Equipotentiality
	Standby
	ON
	Attention, consult accompanying documents/refer to manual
	Defibrillator-proof type CF equipment
IPX1	Protected against dripping water
SN	Serial Number